



BSIT 5th

Section A & B

Lecture 02

Introduction to Computer Networks

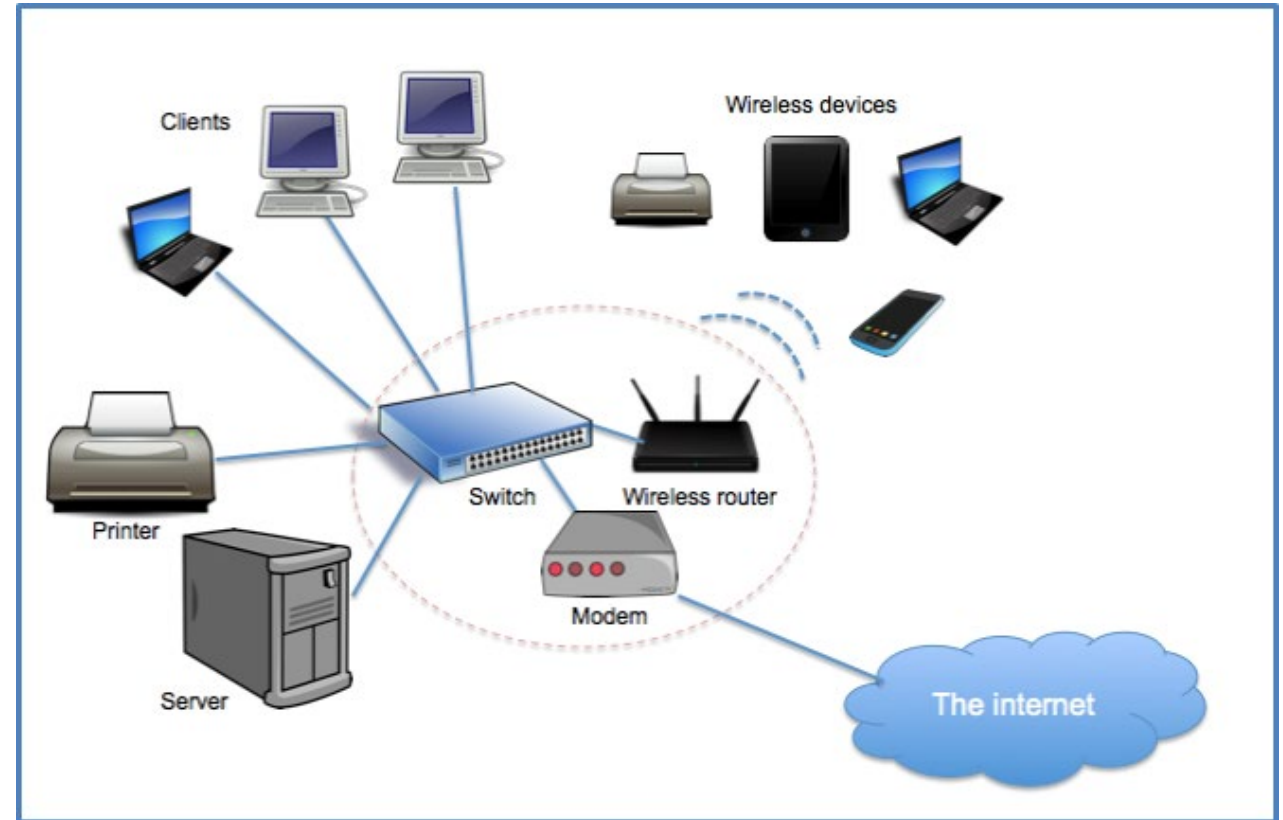
Kashif Ali

Topics to be cover

- Network & Networking Basics
- Types of Network (LAN, WLAN, PAN, WAN, MAN)
- Networking Devices
- WORKGROUP vs Domain (peer-to-peer vs client-server)

What is Computer Network?

- In the simplest terms, a computer network is a group of computers and devices connected to each other so they can exchange data.
- The smallest network may only connect two computers; the largest the internet-connects millions.



Types of Networks



LAN (Local Area Network)

WLAN (Wireless Local Area Network)

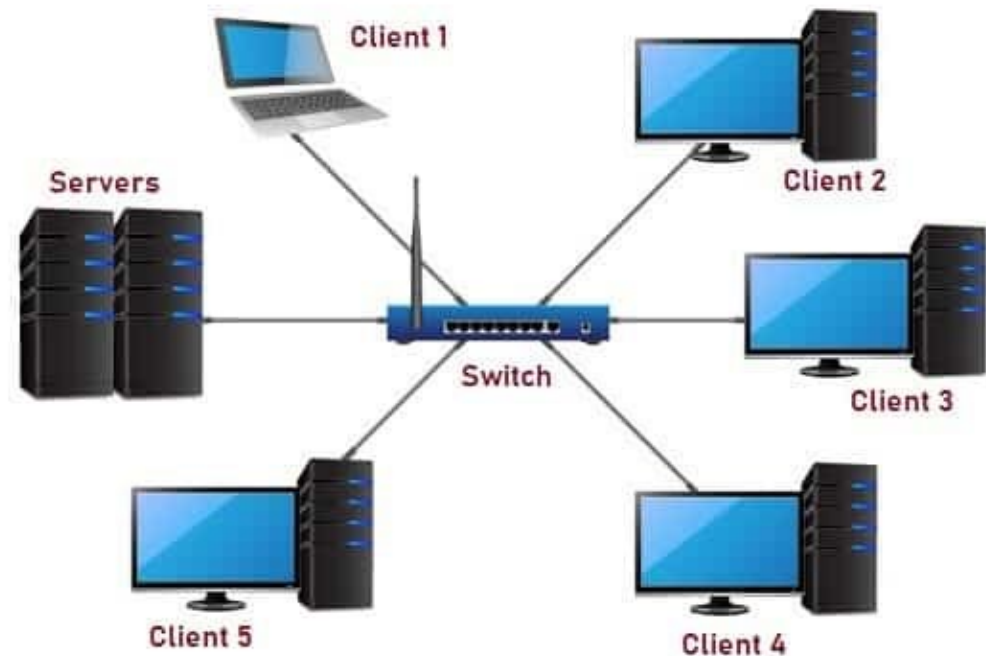
PAN (Personal Area Network)

WAN (Wide Area Network)

MAN (Metropolitan Area Network)

Local Area Network

- A school lab with its ten computers networked together is an example of a local area network.
- LANs can be set up in any defined area, such as a home, a school, an office building.
- LANs are most likely to be based on Ethernet technology.



Wireless Local Area Network

- A WLAN, or wireless LAN, is a network that allows devices to connect and communicate wirelessly.
- Unlike a traditional wired LAN, in which devices communicate over Ethernet cables, devices on a WLAN communicate via Wi-Fi.



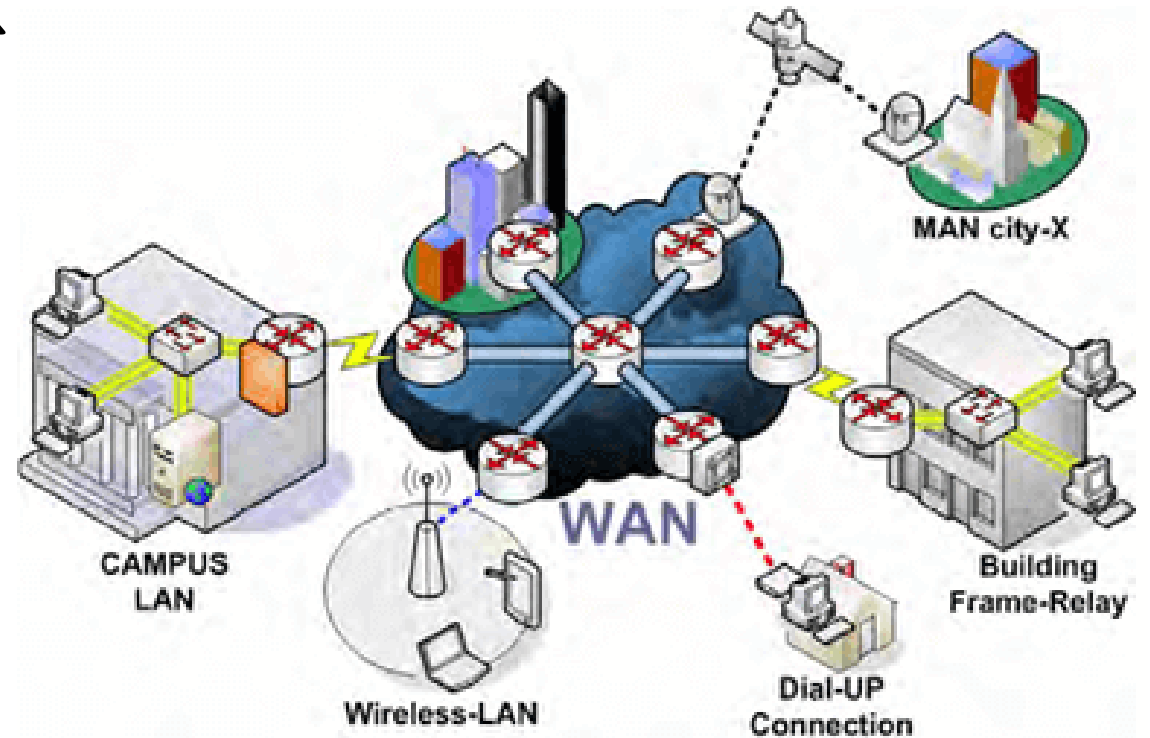
Personal Area Network

- PAN is the computer network that connects computers/devices within the range of an individual person.
- A PAN typically involves a computer, phone, tablet, printer, PDA (Personal Digital Assistant) and other entertainment devices like speakers, video game consoles, etc.



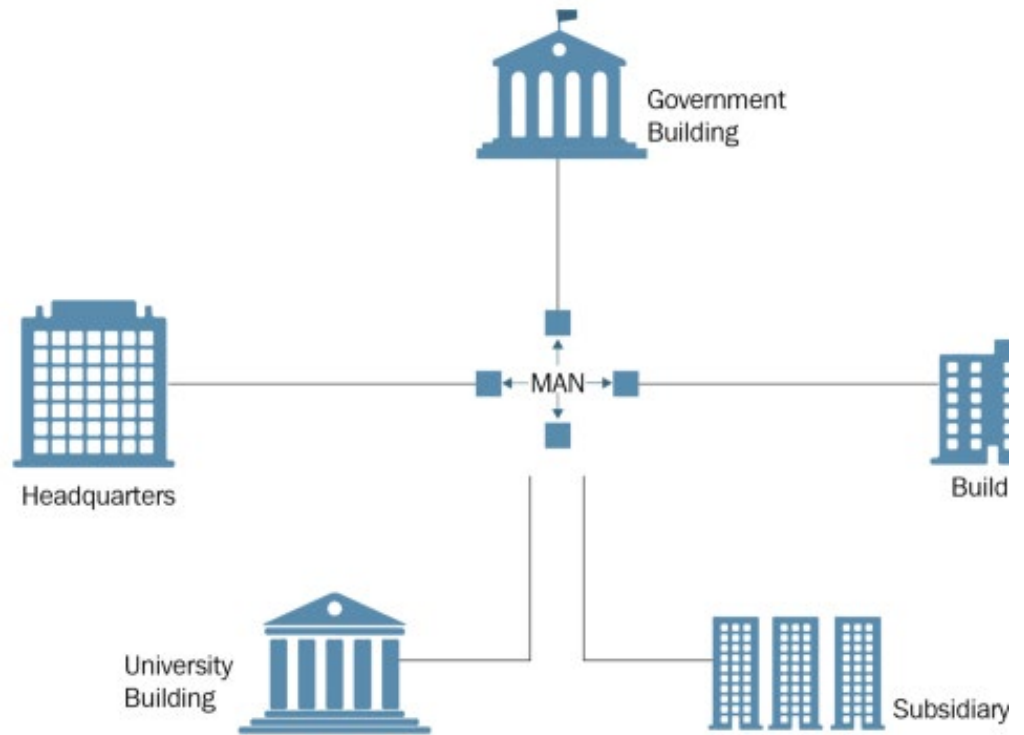
Wide Area Network

- A wide area network (WAN) connects computers and other resources that are miles or even continents apart.
- It covers large distance for communication between computers.
- The most well-known WAN is the Internet, which may cover the entire globe.



Metropolitan Area Network

- A metropolitan area network is a computer network that usually spans a city or in a large metropolitan area.
- A MAN is larger than a LAN but smaller than a WAN.



Networking Devices

- Network devices, or networking hardware, are physical devices that are required for communication and interaction between hardware on a computer network.



Modem



NIC



Repeater



Hub



Switch



Router



Bridge

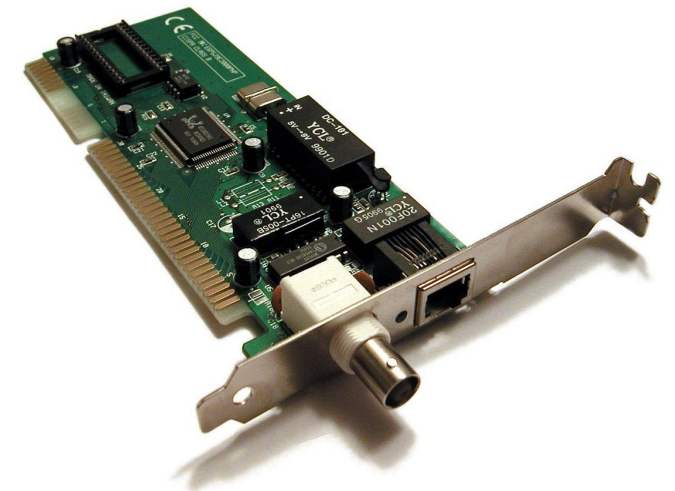


Gateway

Types of Network Devices

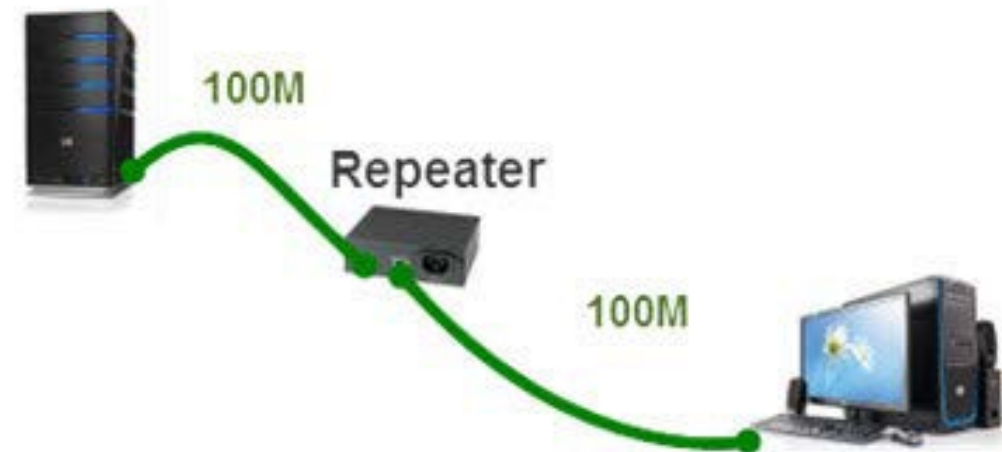
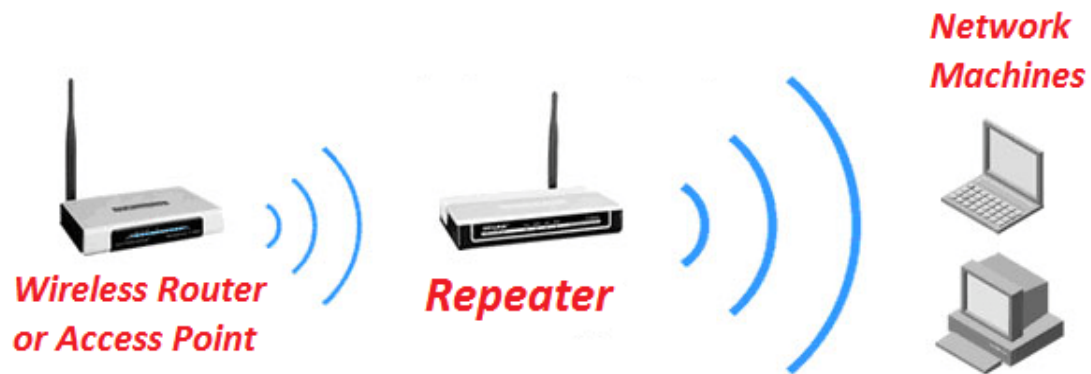
Network Adapters (NIC)

- Also called Network Interface Controller.
- It is a computer hardware component that connects a computer to a computer network.
- A network adapter can be used over a wired or wireless network.



Repeater

A network device used to regenerate or replicate a signal.



Hub

- Hubs connect multiple computer networking devices together.
- A hub is always Half Duplex, so only one device at a time can communicate.
- In a hub, a frame is passed along or “broadcast” to everyone on its ports.



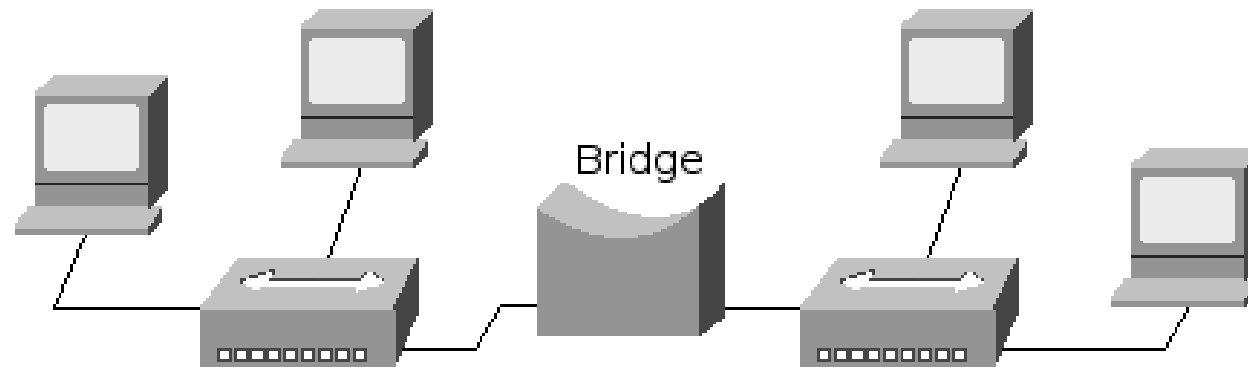
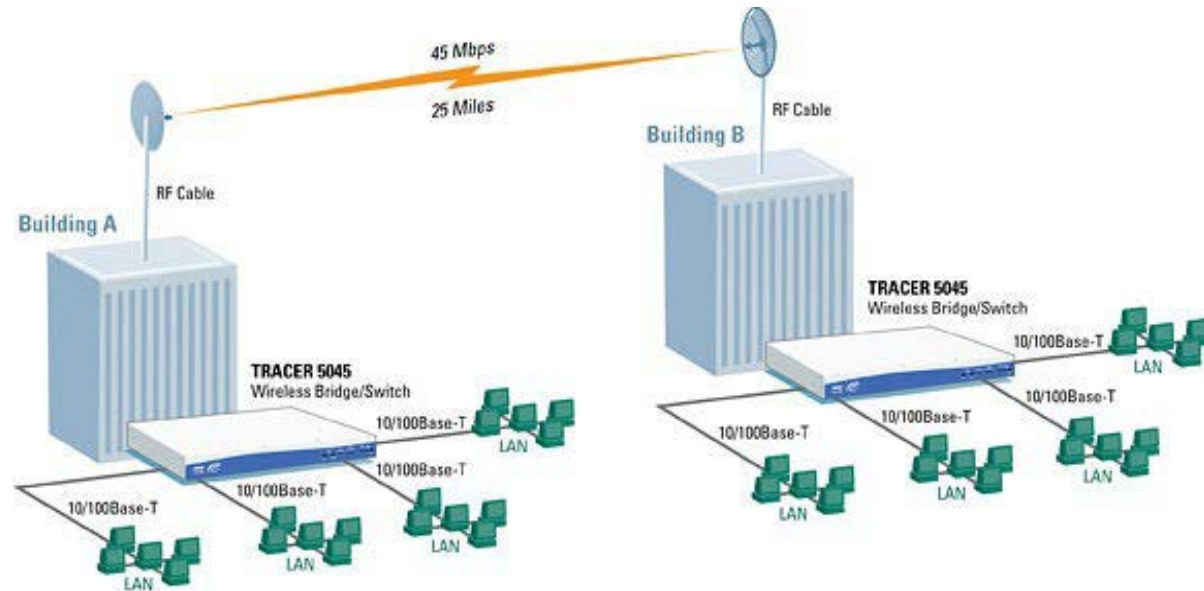
Switch

- Switches generally have a more intelligent role than hubs.
- It also provides centralized communication among connected devices in one LAN.
- Communication in switch can be full duplex.
- Switch has a MAC-Address Table to store information of the connected devices.



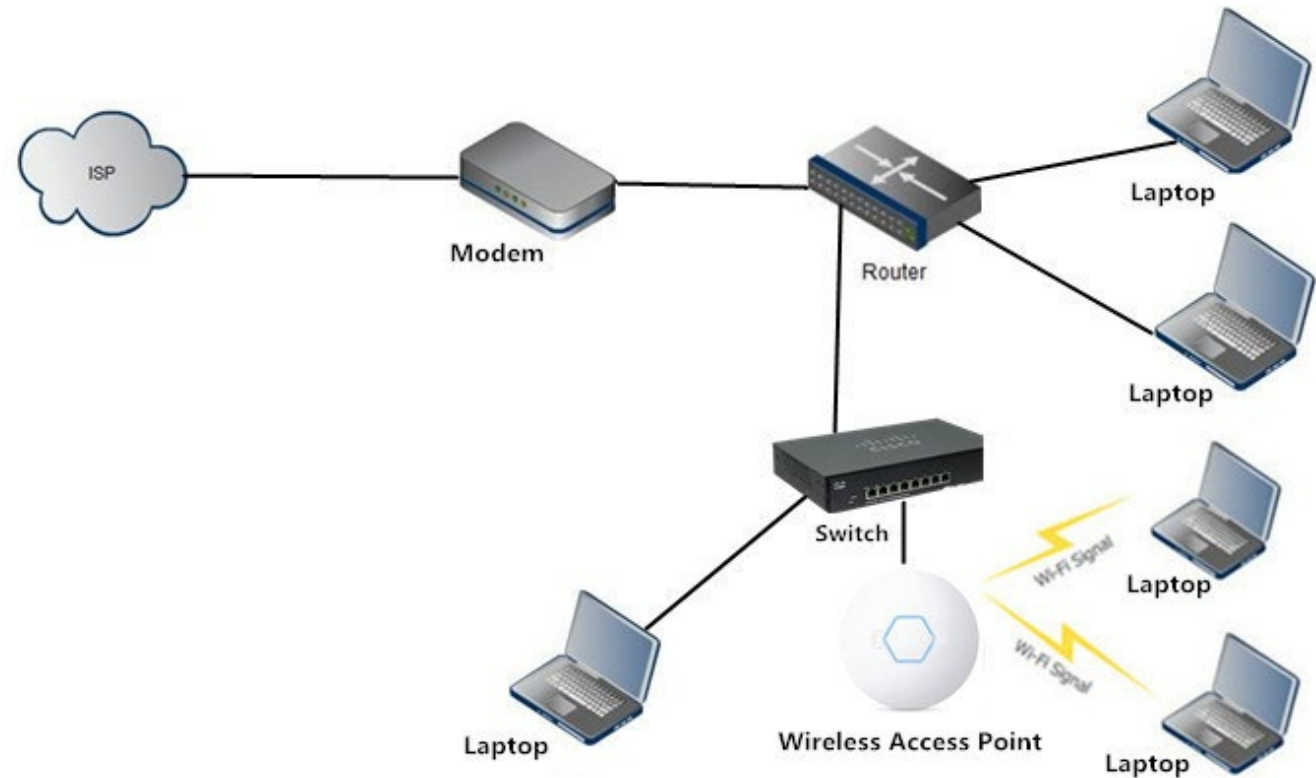
Bridge

- Bridge is a network device that provides a connection between two local area networks (LANs) or two segments of the same local area network.



Access Point

- An access point is a device that creates a wireless local area network, or WLAN, usually in an office or large building.



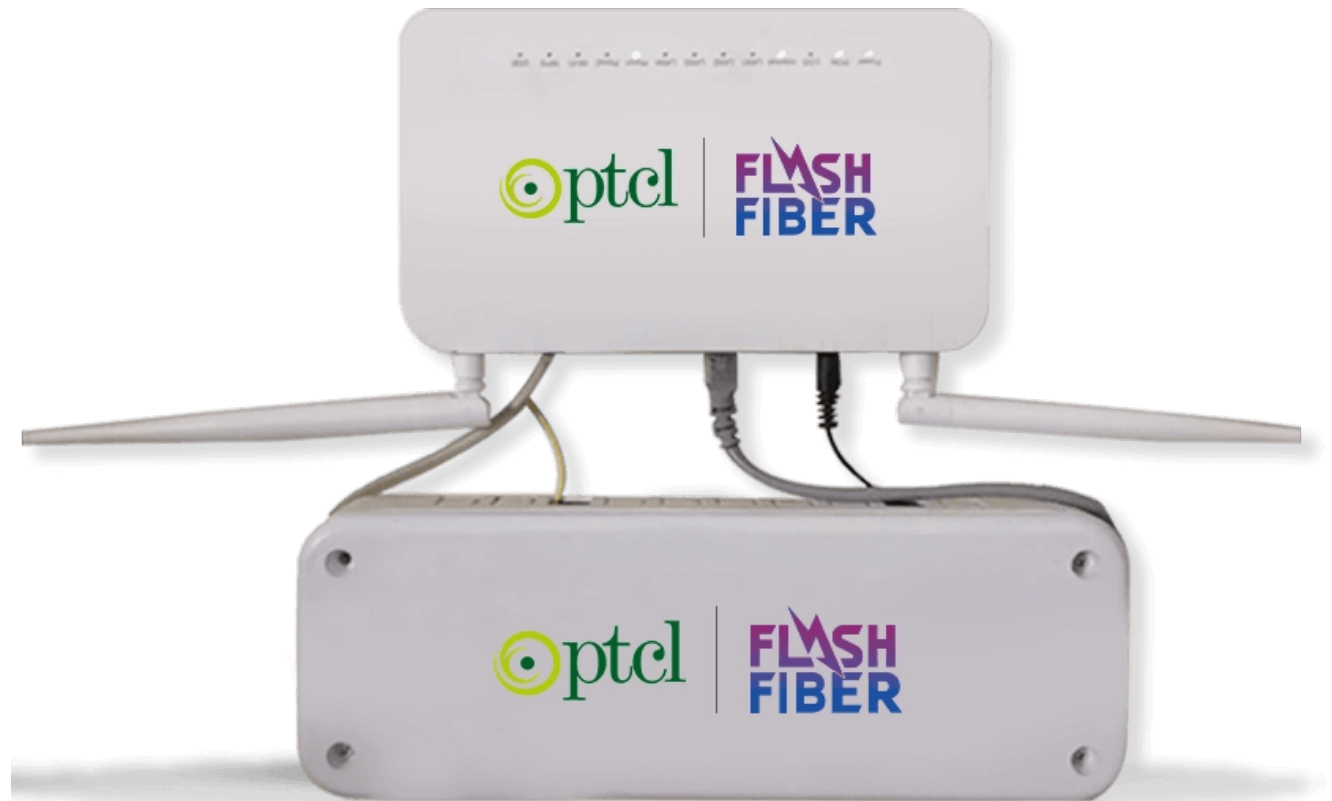
Router

- A router connects different networks.
- It is a WAN device.



Modem

- A modem is a device that connects your home to your Internet Service Provider (ISP).



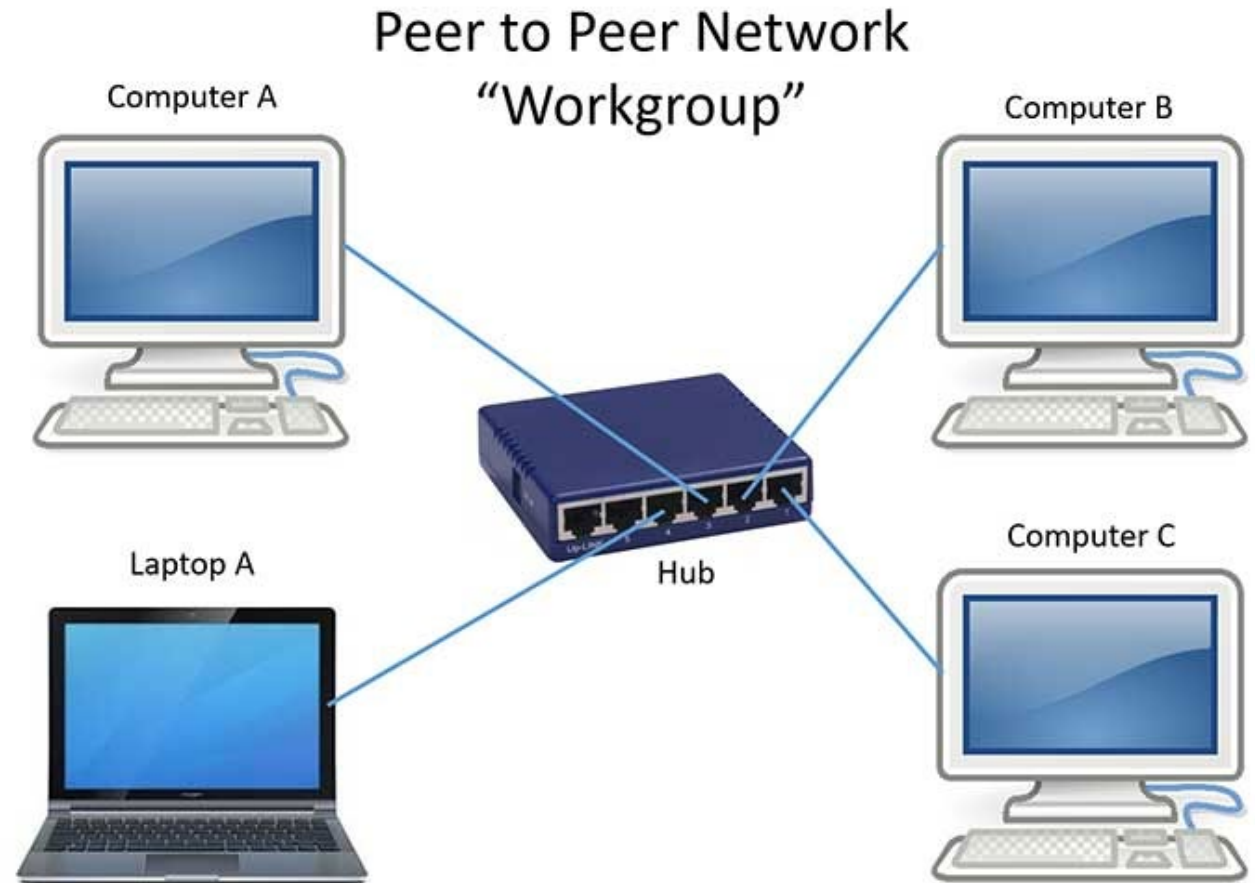
Gateway

A gateway is a device that combines the functions of a modem and a router.



Peer-to-Peer Network

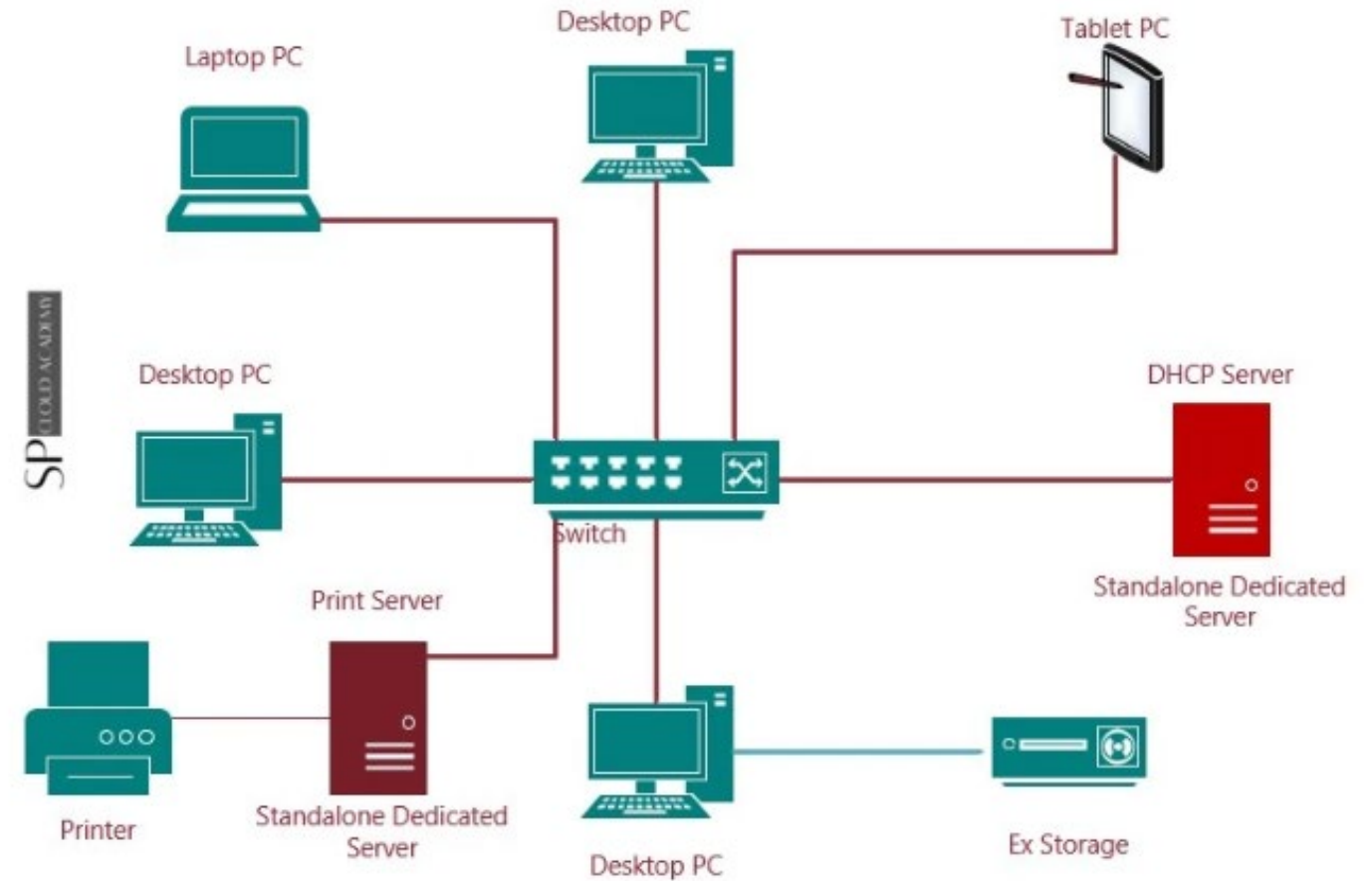
- Your peers are your equals.
- In a peer-to-peer (P2P) network, all the computers are equals.
- Peer-to-peer networks are usually small, having anywhere from two to ten computers.
- Workgroup is Microsoft's term for a peer-to-peer local area network.



Client-Server Network

- A Client Server Network is a Network Model in which one or more computers offer a service to other computers, but no computer has central authorization and controlling power all over the network.

Client-Server Network

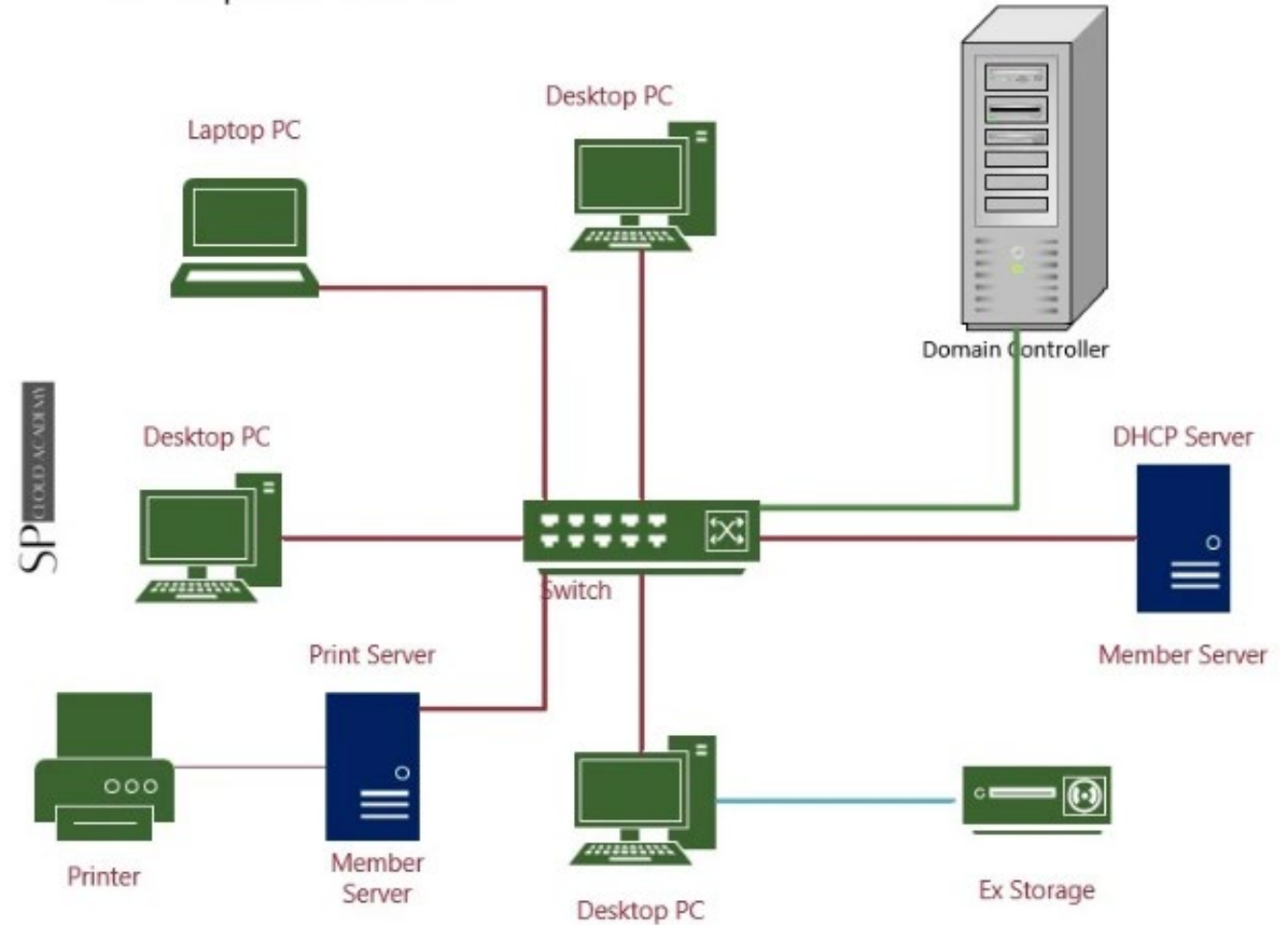


Domain based Network

- A system of centralized network administration, in which the permissions that grant access to resources in the network are maintained in one or more servers called “domain controllers”.
- Microsoft’s Active Directory is based on the domain system.

Domain Based Network

Domain: spca.education





THANK YOU!

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